MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2022/2023

BMS1024 – MANAGERIAL STATISTICS

(All sections / Groups)

13 JULY 2023
9.00 a.m – 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **THIRTEEN (13)** printed pages with:
   Section A: Ten (10) multiple choice questions (20%)
   Section B: Three (3) structured questions (80%)

2. Answer **ALL** questions.

3. Answer **Section A** in the multiple-choice answer sheet provided and **Section B** in the answer booklet provided.

4. Mathematical formulas and Statistical tables are attached at the end of the question paper.

5. Students are allowed to use non-programmable scientific calculators with no restrictions.

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

There are TEN (10) questions in this section. Answer ALL questions on the multiple-choice answer sheet.

1. Which of the variables listed below is not considered quantitative?

   A. Age of a person
   B. Gender of a person
   C. Number of dreams recalled
   D. Number of students in BMS1024 class

2. Despite being measured in different units, _____ can be employed to assess the variation or dispersion between two or more sets of data.

   A. Range
   B. Standard deviation
   C. Coefficient of variation
   D. Interquartile range

3. Which of the following statements is true when a parameter is computed from a set of data?

   A. The data are obtained from a census.
   B. The data are obtained from a random sample.
   C. The data is from a sample that is representative of the population.
   D. The data must be quantitative.

4. The sampling distribution of X appears as below:

X	10	15	20	25	30
P(X)	0.25	0.30	0.10	0.3	x

   Then, the expected value of X, $E(X)$ is

   A. 17.75
   B. 18
   C. 17.5
   D. Cannot be determined

5. In binomial experiment, the successive trials are _____.

   A. dependent
   B. independent
   C. mutually exclusive
   D. fixed

Continued...

6. The length of time for a college student to find a parking spot in the library parking lot follows a normal distribution with a mean of 3.5 minutes and a standard deviation of 1 minute. How many minutes if 98% of the college students trying to find a parking spot in the library parking lot?

   A. 3.5 minutes
   B. 5.5 minutes
   C. 2.5 minutes
   D. 1.5 minutes

7. A major department store chain is interested in estimating the mean amount its credit card customers spent on their first visit to the chain's new store in the mall. Fifteen credit card accounts were randomly sampled and analyzed with the following results: $\bar{x} = RM\,50.50$ and $s = RM\,20$. Assuming the distribution of the amount spent on their first visit is normal, what is the shape of the sampling distribution of the sample mean that will be used to create the desired confidence interval for μ?

   A. approximately normal with a mean of RM 50.50
   B. a standard normal distribution
   C. a *t*-distribution with 15 degrees of freedom
   D. a *t*-distribution with 14 degrees of freedom

8. In 1991, moving companies are required by the government to publish a Carrier Performance Report. In addition, they need to include the number of shipments which claimed RM50 or greater for damage was filed. There were two companies named; K-Move and L-Move, decided to estimate this figure by sampling their records, and they were reported their data in the following table:

Name of company	***K-Move***	***L-Move***
Total of shipments sampled	900	750
Number of shipments with a damage claimed ≥RM50	162	60

   Which of the hypothesis statistical test would be used to analyze this data?

   A. *t-test* for the difference between two means.
   B. *F-test* for the ratio of variances.
   C. *Z-test* for the difference between two proportions.
   D. Separate variance binomial test for the difference between two means.

Continued...

9. If an economist wishes to determine whether there is evidence that mean family income in a community exceeds RM50,000.

A. a one tail test should be utilised.
B. a two-tail test should be utilised.
C. either a one tail or two-tail test could be applied with equivalent results.
D. None of the above.

10. A computer software developer would like to use the number of downloads (in thousands) for the trial version of his new software to predict the amount of revenue (in thousands of dollars) on selling the full version of his new software. A table is provided as below to display an output from a simple linear regression analysis:

Multiple R	0.8691
R Square	0.7554
Adjusted R Square	0.7467
Standard Error	44.4765
Observations	30

Which of the following is the correct interpretation for the coefficient of determination?

A. 75.54% of the variation in the number of downloads can be explained by the variation in revenue.
B. 74.67% of the variation in the number of downloads can be explained by the variation in revenue.
C. 86.91% of the variation in revenue can be explained by the variation in the number of downloads.
D. 75.54% of the variation in revenue can be explained by the variation in the number of downloads.

Continued...

SECTION B: STRUCTURED QUESTIONS (80 MARKS)

There are THREE questions in this section. Candidates MUST answer ALL THREE questions.

Question 1 (30 Marks)

a) In a follow-up survey conducted among 300 households that purchased large-screen HDTVs, the households were asked about their satisfaction with the purchase. The table below presents the combined responses to the satisfaction question along with the responses regarding the television's rate of speed.

Television Refresh Rate	Satisfied with purchase?		
	YES	**NO**	**Total**
Faster	64	16	80
Standard	176	44	220
Total	240	60	300

Determine whether being satisfied with the purchase and the refresh rate of the television purchased are independent.

[5 marks]

b) In order to enhance customer service during the busy noon-to-1p.m. lunch period, a bank with a branch in a commercial district of a city has decided to investigate the waiting time in their current process. To conduct the study, data was collected from a random sample of 15 customers, and their waiting times (in minutes) were recorded as follows:

4.21	5.55	3.02	5.13	4.77
2.34	3.54	3.20	4.50	6.10
0.38	5.12	6.46	6.19	3.79

Another branch, situated in a residential area, is also focused on enhancing customer service during the lunch period. To assess the current process, a random sample of 15 customers was selected, and their waiting times (in minutes) were recorded as follows:

9.66	5.90	8.02	5.79	8.73
3.82	8.01	8.35	10.49	6.68
5.64	4.08	6.17	9.91	5.47

i. What is the average waiting time (in minutes) for both bank branches? Discuss the difference of the average values.

[5 marks]

Continued...

ii. Find the median and standard deviation of waiting time (in minutes) for both bank branches.

[8 marks]

iii. Describe the shape of the distribution of waiting time for both bank branches.

[2 marks]

iv. At 5% significance level, can we conclude that the customers at branch which located in residential area need to wait longer compared to the customers who entered bank branch in the commercial district?

[10 marks]

Question 2 (25 Marks)

a) Zetty is participating in both a badminton match and a tennis match. The badminton match has been scheduled one week before the tennis match. According to her coach's prediction, there is a $\frac{9}{10}$ probability of Zetty winning the badminton match. Furthermore, the coach believes that if Zetty wins the badminton match, the probability of her winning the tennis match is $\frac{3}{5}$. On the other hand, if she loses the badminton match, there is a $\frac{2}{3}$ probability of her losing the tennis match as w ell.

i. Draw the contingency table for the above scenario.

[5 marks]

ii. Find the probability that Zetty will win for the tennis match.

[2 marks]

iii. The matches have been re-scheduled. Given that Zetty won the tennis match, what is the probability that she will also win the badminton match?

[3 marks]

b) Complaints about a Website brokerage firm occur at a rate of five per day and the distribution of the number of complaints follows a Poisson distribution.

i. What is the probability that the firm receives less than 3 complaints in a day?

[5 marks]

Continued...

ii. What is the probability that the firm receives 25 to 27 complaints in a 5-day period?

[6 marks]

iii. Calculate the mean and standard deviation of the distribution.

[4 marks]

Question 3 (25 Marks)

a) An operations manager wanted to investigate whether there is a correlation between the amount of training received by production line workers and the time it takes for them to troubleshoot process problems. To study this, a sample of recently trained line workers was chosen. The data collected includes the number of hours of training they received and the corresponding time it took (in minutes) for them to troubleshoot their most recent process problem.

Below are the regression results for the sample.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.965387
R Square	0.931972
Adjusted R Square	0.926739
Standard Error	1.435885
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	367.1971	367.1971	178.0985	5.78E-09
Residual	13	26.80294	2.061764		
Total	14	394			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	30.7295	1.02337	30.02776	2.15E-13
Hours of Training	-1.83599	0.137575	-13.3454	5.78E-09

Continued...

i. State the null and alternative hypotheses to test the association between troubleshooting time and amount of training received by the line production workers.

[2 marks]

ii. State the estimated linear regression equation.

[2 marks]

iii. State and interpret the regression coefficients.

[2 marks]

iv. What is the proportion of the variability in troubleshooting time can be accounted for by amount of training received? How much is the unexplained variability?

[2 marks]

v. Does the independent variable provide a significant contribution to the model? Perform the appropriate statistical inference at 5% significance level. Discuss the result.

[5 marks]

vi. Predict the troubleshooting time (in minutes) for two-line workers who received 8 hours and 15 hours of training respectively. Are both predictions reliable?

[5 marks]

b) Below is a table outlining a basket of goods:

Product	Price (RM)		Quantity	
	2004	2020	2004	2020
Avocados	3.00	3.20	60	80
Strawberries	2.00	2.50	100	90
Grapes	3.50	4.00	500	700

Determine the Laspeyres Price Index (LPI) and Paashe Price Index (PPI) for 2016 using 2000 as the base period.

[7 marks]

End of Questions.

A. DESCRIPTIVE STATISTICS

Mean = $\frac{\sum X_i}{n}$

Standard Deviation (s) = $\sqrt{\frac{\sum X^2}{n-1} - \frac{(\sum X)^2}{n(n-1)}}$

Pearson's Coefficient of Skewness (S_k) = $\frac{3(\overline{X} - \text{Median})}{s}$ or $\frac{\overline{X} - \text{Mode}}{s}$

B. PROBABILITY

P (A or B) = P (A) + P (B) - P (A and B)

P (A and B) = P (A) P (B) if A and B are independent

P (A | B) = P (A and B) / P (B)

Poisson Probability Distribution

If X follows a Poisson Distribution P (λ) where $P(X = x) = \frac{e^{-\lambda}\lambda^x}{x!}$

then the mean = E(X) = λ and variance = VAR(X) = λ

Binomial Probability Distribution

If X follows a Binomial Distribution B (n, p) where $P(X = x) = {}^nC_x p^x q^{n-x}$

then the mean = E(X) = np and variance = VAR(X) = npq where q = 1 - p

Normal Distribution

If X follows a Normal distribution N(μ , σ) where E(X) = μ and VAR(X) = σ^2

then $z = \frac{X - \mu}{\sigma}$

C. EXPECTATION AND VARIANCE OPERATORS

E (X) = $\sum$[X • P(X)]

VAR (X) = E(X^2) - [E(X)] ^{2}

If E (X) = μ then E (kX) = $k\mu$, E(X + Y) = E(X) + E(Y)

If VAR (X) = σ^2 then VAR (kX) = $k^2\sigma^2$,

VAR (aX + bY) = a^2VAR(X) + b^2VAR(Y) + 2ab COV(X, Y)

where COV(X , Y) = E(X Y) – [E(X) E(Y)]

Continued...

D. CONFIDENCE INTERVAL ESTIMATION AND SAMPLE SIZE DETERMINATION

(100 - α) % Confidence Interval for Population Mean (σ Known) = $\overline{X} \pm Z_{\alpha/2}\left(\frac{\sigma}{\sqrt{n}}\right)$

(100 - α)% Confidence Interval for Population Mean (σ Unknown) = $\overline{X} \pm t_{\alpha/2,n-1}\left(\frac{s}{\sqrt{n}}\right)$

(100 - α)% Confidence Interval for Population Proportion = $p \pm Z_{\alpha/2}\sqrt{\frac{p(1-p)}{n}}$

Sample Size Determination for Population Mean $= n \geq \frac{(Z_{\alpha/2})^2 \sigma^2}{E^2}$

Sample Size Determination for Population Proportion $= n \geq \frac{(Z_{\alpha/2})^2 p(1-p)}{E^2}$

Where E = Limit of Error in Estimation

E. HYPOTHESIS TESTING

One Sample Mean Test	
Standard Deviation (σ) Known	**Standard Deviation (σ) Not Known**
$Z = \frac{\overline{x} - \mu}{\sigma/\sqrt{n}}$	$t = \frac{\overline{x} - \mu}{s/\sqrt{n}}$
One Sample Proportion Test	
$Z = \frac{p - \pi}{\sqrt{\frac{\pi(1-\pi)}{n}}}$	

Continued...

Two Sample Mean Test

Standard Deviation (σ) Known

$$z = \frac{(\overline{x_1} - \overline{x_2})}{\sqrt{\sigma_1^2/n_1 + \sigma_2^2/n_2}}$$

Standard Deviation (σ) Not Known

$$t = \frac{(\overline{x_1} - \overline{x_2})}{\sqrt{S_p^2\left(1/n_1 + 1/n_2\right)}} \quad \text{where} \quad S_p^2 = \frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{(n_1-1)+(n_2-1)}$$

Two Sample Proportion Test

$$z = \frac{(p_1 - p_2)}{\sqrt{p(1-p)\left[\frac{1}{n_1} + \frac{1}{n_2}\right]}} \text{ where } p = \frac{(n_1 p_1) + (n_2 p_2)}{n_1 + n_2} = \frac{X_1 + X_2}{n_1 + n_2}$$

where X_1 and X_2 are the number of successes from each population

F. REGRESSION ANALYSIS

SIMPLE LINEAR REGRESSION:

Correlation Coefficient

$$r = \frac{\Sigma XY - \left[\frac{\Sigma X \Sigma Y}{n}\right]}{\sqrt{\left[\Sigma X^2 - \left(\Sigma X\right)^2/n\right]\left[\Sigma Y^2 - \left(\Sigma Y\right)^2/n\right]}} = \frac{COV(X,Y)}{\sigma_X \sigma_Y}$$

Regression Coefficient

$$b_1 = \frac{\sum XY - \left[\frac{\sum X \sum Y}{n}\right]}{\left[\sum X^2 - \left(\left(\sum X\right)^2/n\right)\right]}, \qquad b_0 = \overline{Y} - b_1 \overline{X}$$

Continued...

MULTIPLE LINEAR REGRESSION:

Adjusted r-square $= 1 - \left[\frac{(1-r^2)(n-1)}{(n-p-1)}\right]$ where p = number of independent variables

ANOVA Table for Multiple Linear Regression			
Source	**Degrees of Freedom**	**Sum of Squares**	**Mean Squares**
Regression	p	SSR	MSR = SSR/p
Error	$n-p-1$	SSE	MSE = SSE/($n-p-1$)
Total	$n-1$	SST	
Test Statistic for Significance of the Overall Regression Model = F = MSR/MSE			
Test Statistic for Significance of each Explanatory Variable = $t^* = b_i / S_{bi}$ and the Critical $t = t_{(n-p-1),\alpha/2}$			

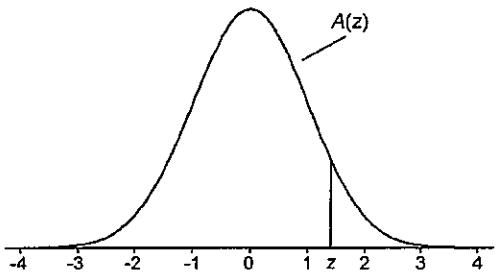
G. INDEX NUMBERS

Simple Price Index $P = \frac{p_t}{p_0} \times 100$	**Laspeyres Quantity Index** $P = \frac{\sum p_0 q_t}{\sum p_0 q_0} \times 100$
Aggregate Price Index $P = \frac{\sum p_t}{\sum p_0}(100)$	**Paasche Quantity Index** $P = \frac{\sum p_t q_t}{\sum p_t q_0} \times 100$
Laspeyres Price Index $P = \frac{\sum p_t q_0}{\sum p_0 q_0} \times 100$	**Fisher's Ideal Price Index** $\sqrt{(Laspeyres\ \ Price\ Index)(Paa\ sche\ Price\ Index)}$
Paasche Price Index $P = \frac{\sum p_t q_t}{\sum p_0 q_t} \times 100$	**Value Index** $V = \frac{\sum p_t q_t}{\sum p_0 q_0} \times 100$

Continued...

TABLE A.1

Cumulative Standardized Normal Distribution



$A(z)$ is the integral of the standardized normal distribution from $-\infty$ to z (in other words, the area under the curve to the left of z). It gives the probability of a normal random variable not being more than z standard deviations above its mean. Values of z of particular importance:

z	$A(z)$	
1.645	0.9500	Lower limit of right 5% tail
1.960	0.9750	Lower limit of right 2.5% tail
2.326	0.9900	Lower limit of right 1% tail
2.576	0.9950	Lower limit of right 0.5% tail
3.090	0.9990	Lower limit of right 0.1% tail
3.291	0.9995	Lower limit of right 0.05% tail

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998
3.5	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998
3.6	0.9998	0.9998	0.9999							

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t-Distribution Critical Values

Table entry for p and C is the value of t^* with probability p lying above it and probability C lying between $-t^*$ and t^*.

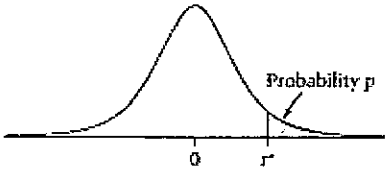

TABLE B t-Distribution Critical Values

	Tail Probability p											
df	.25	.20	.15	.10	.05	.025	.02	.01	.005	.0025	.001	.0005
1	1.000	1.376	1.963	3.078	6.314	12.71	15.89	31.82	63.66	127.3	318.3	636.6
2	.816	1.061	1.386	1.886	2.920	4.303	4.849	6.965	9.925	14.09	22.33	31.60
3	.765	.978	1.250	1.638	2.353	3.182	3.482	4.541	5.841	7.453	10.21	12.92
4	.741	.941	1.190	1.533	2.132	2.776	2.999	3.747	4.604	5.598	7.173	8.610
5	.727	.920	1.156	1.476	2.015	2.571	2.757	3.365	4.032	4.773	5.893	6.869
6	.718	.906	1.134	1.440	1.943	2.447	2.612	3.143	3.707	4.317	5.208	5.959
7	.711	.896	1.119	1.415	1.895	2.365	2.517	2.998	3.499	4.029	4.785	5.408
8	.706	.889	1.108	1.397	1.860	2.306	2.449	2.896	3.355	3.833	4.501	5.041
9	.703	.883	1.100	1.383	1.833	2.262	2.398	2.821	3.250	3.690	4.297	4.781
10	.700	.879	1.093	1.372	1.812	2.228	2.359	2.764	3.169	3.581	4.144	4.587
11	.697	.876	1.088	1.363	1.796	2.201	2.328	2.718	3.106	3.497	4.025	4.437
12	.695	.873	1.083	1.356	1.782	2.179	2.303	2.681	3.055	3.428	3.930	4.318
13	.694	.870	1.079	1.350	1.771	2.160	2.282	2.650	3.012	3.372	3.852	4.221
14	.692	.868	1.076	1.345	1.761	2.145	2.264	2.624	2.977	3.326	3.787	4.140
15	.691	.866	1.074	1.341	1.753	2.131	2.249	2.602	2.947	3.286	3.733	4.073
16	.690	.865	1.071	1.337	1.746	2.120	2.235	2.583	2.921	3.252	3.686	4.015
17	.689	.863	1.069	1.333	1.740	2.110	2.224	2.567	2.898	3.222	3.646	3.965
18	.688	.862	1.067	1.330	1.734	2.101	2.214	2.552	2.878	3.197	3.611	3.922
19	.688	.861	1.066	1.328	1.729	2.093	2.205	2.539	2.861	3.174	3.579	3.883
20	.687	.860	1.064	1.325	1.725	2.086	2.197	2.528	2.845	3.153	3.552	3.850
21	.686	.859	1.063	1.323	1.721	2.080	2.189	2.518	2.831	3.135	3.527	3.819
22	.686	.858	1.061	1.321	1.717	2.074	2.183	2.508	2.819	3.119	3.505	3.792
23	.685	.858	1.060	1.319	1.714	2.069	2.177	2.500	2.807	3.104	3.485	3.768
24	.685	.857	1.059	1.318	1.711	2.064	2.172	2.492	2.797	3.091	3.467	3.745
25	.684	.856	1.058	1.316	1.708	2.060	2.167	2.485	2.787	3.078	3.450	3.725
26	.684	.856	1.058	1.315	1.706	2.056	2.162	2.479	2.779	3.067	3.435	3.707
27	.684	.855	1.057	1.314	1.703	2.052	2.158	2.473	2.771	3.057	3.421	3.690
28	.683	.855	1.056	1.313	1.701	2.048	2.154	2.467	2.763	3.047	3.408	3.674
29	.683	.854	1.055	1.311	1.699	2.045	2.150	2.462	2.756	3.038	3.396	3.659
30	.683	.854	1.055	1.310	1.697	2.042	2.147	2.457	2.750	3.030	3.385	3.646
40	.681	.851	1.050	1.303	1.684	2.021	2.123	2.423	2.704	2.971	3.307	3.551
50	.679	.849	1.047	1.299	1.676	2.009	2.109	2.403	2.678	2.937	3.261	3.496
60	.679	.848	1.045	1.296	1.671	2.000	2.099	2.390	2.660	2.915	3.232	3.460
80	.678	.846	1.043	1.292	1.664	1.990	2.088	2.374	2.639	2.887	3.195	3.416
100	.677	.845	1.042	1.290	1.660	1.984	2.081	2.364	2.626	2.871	3.174	3.390
1000	.675	.842	1.037	1.282	1.646	1.962	2.056	2.330	2.581	2.813	3.098	3.300
∞	.674	.841	1.036	1.282	1.645	1.960	2.054	2.326	2.576	2.807	3.091	3.291
	50%	60%	70%	80%	90%	95%	96%	98%	99%	99.5%	99.8%	99.9%
	Confidence level C											

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